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## ON THE GROWTH OF DEER-HORNS, WITH REFERENCE TO SOME ABNORMAL ANTLERS OF THE ROE.

BY THE EDITOR.

THE manner in which the horns of deer are shed and annually reproduced is one of the most curious phenomena in Natural History.

The exact time of shedding the horns depends in some measure upon the age of the animal and the temperature of the winter and early spring. They are sometimes shed towards the end of February or beginning of March; but should the winter be cold and spring protracted stags shed their horns as late as May—the old ones at the beginning, the young ones at the end of that month.

It is very rarely, however, that an old stag is seen with his old horns on after the beginning of May; but a two-year-old deer will carry them for a month or two later.

In a few days after the old horns have dropped, the new growth shows itself, and gradually the new antlers are developed: they are then covered with a thick velvet, which preserves the point, as yet soft and tender, from injury. While in this soft condition they are very sensitive, and to avoid injury from striking against trees the deer leads a life of retirement. In about ten or twelve weeks they are full grown, and as they gradually harden, the animal rubs them against a tree to get rid of the velvet. This can only be done gradually, and a deer may often be seen at this time of year with the velvet hanging in strips, being only partially detached from the horns.

With the Red-deer, as a rule, the horns begin to appear at the age of about seven months, when two small protuberances are perceptible; and gradually, in the second year, straight pointed horns shoot forth. About the beginning of April, before the animal is quite two years old, these loosen at the root and drop off. In the course of the summer another horn grows up with a "tine" issuing from it in a downward curve towards the eyes; a year later an additional "tine" is seen on each horn, and from year to year, should no accident occur, the antlers, which in summer time shoot up anew to replace the old ones, increase in size and weight until the animal is six years old, after which, it is believed, no material alteration takes place; in other words, a deer will carry as fine a head at six years old as he is ever likely to have.

This is a brief summary of what takes place in regard to the casting and reproduction of the horns, so far as has been ascertained by the observation of sportsmen and foresters.

The great drawback in ascertaining very precisely what occurs is the difficulty of keeping *the same animal* under observation for any length of time. For unless it has some peculiarity about it which will always serve to distinguish it amongst its fellows, or unless it be specially marked or isolated in confinement, it is certain to escape recognition the following year; the more so because the change which by that time will have taken place in the growth of the antlers will have materially altered its appearance.

Some years ago Mr. J. Clarke, surgeon, of Lynton, being anxious to settle certain points in connection with the growth of deer-horns, upon which a difference of opinion prevailed, conceived the idea of keeping a solitary Red-deer in a paddock under his own immediate supervision, and making regular observations upon it until it reached the condition of a fully grown adult animal.

This he carried out, and subsequently published the result of his observations in a small pamphlet, which was printed at Barnstaple in 1866.\* As this pamphlet is now out of print, and unprocurable, it will doubtless be of service to naturalists to

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\* 'A Treatise on the Growth of the Horns of the Red-deer.' By J. Clarke, Lynton. Post 8vo, pp. 12. Barnstaple: A. C. Wood. 1866.

quote it *in extenso*, for the statements which it contains are founded on personal observation, and therefore valuable, and probably very few of my readers have seen the original.

“Various accounts have been written respecting the Red-deer; but as controversies on the subject of the growth of the horns arise from time to time, I am induced to present the following observations, although they will be found to vary very materially from what has been written by others who are considered good authorities. The best description, and nearest the truth, which I have yet met with, is in the eighth volume of the ‘Penny Cyclopædia,’ published by Charles Knight & Co., in the year 1838. This, however, is not exactly correct, for, in the first place, it states that the horns of a male Red-deer do not appear till its second year, whereas they do appear in his first year as a knob, or single straight horn, varying in length from one to nine inches, but are not shed until he is twenty months old. The formation of horns commences by an increase of blood through the arterial circulation, as has been correctly stated by John Hunter in his work on the blood, and copied into the ‘Penny Cyclopædia’; but this is a part of the subject which I need not dwell on, and beg to refer the reader to the work named for further information. Shortly after shedding the first horns, the formation of the second takes place, according to the same process, and these are shed in the latter end of April or the beginning of May, when they will have attained a length of nearly two feet, or perhaps more; these in turn drop off, to be again renewed, and thus the same process is continued for a series of years, except some casualty should happen to his head, or generative powers, whereby the growth of horns becomes immediately arrested, as has been clearly and satisfactorily proved.

“Several years since there came into my possession a young male Red-deer, only a few days old. Just then the Rev. J. Boyce (or as he was familiarly termed ‘Stag-hunter Boyce’) happened to pass through Lynton, on his journey to Porlock, and I had some conversation with him respecting stag-hunting and the Red-deer. Knowing him to be the oldest stag-hunter, and one who had been present at more deaths of the wild Red-deer in the county than any other living being, I, in the course of conversation, asked him whether he could tell, or if he thought it possible for anyone to tell, the age of a stag by his horns. His answer was prompt and decisive, ‘No.’ I then told him that I had a young male Red-deer, and that I intended to keep him for the sole purpose of ascertaining and proving the question. He said that this was the only way in which the different ages could be possibly ascertained, as no two persons could be found to agree on the subject.

“At the time that this deer was in my possession I had an opportunity, which I doubt if anyone will again possess, of frequently seeing together a

herd of from fifty to eighty, or more, Red-deer of all ages (then harboured and protected on Brendon Barton and Scobhill, by the late Mr. Knight, of Exmoor), and which would allow a person on horseback to approach quite close to them, so that I could distinctly trace the growth of the horns of the different animals there assembled, and contrast them with the one in my possession. This opportunity I frequently embraced, and consequently I consider myself to have been in a position to give more correct information than any person who has yet written on the subject, and the result of my experience I will now proceed to state.

“In the first year of the stag's life there appears a small straight horn, or it may be merely a knob, varying from one to nine inches in length. In the second year he may have what is termed in Devonshire his ‘brow,’ ‘bay,’ and ‘tray,’ which are called antlers; but frequently there is an absence of one or other of these, and when this is the case I have observed that it continues as he advances in years, and that the points on the top are diminished accordingly. But I must here remark that the points will not alone serve as a guide to his age, although by a combination of these and other marks, as I shall hereafter state, it may be ascertained. In short, I defy any individual who has merely followed the hounds and been present at the death—I care not how many times—to tell the age of a stag by his horns only.

“I have myself followed the hounds for a great number of years, and been present at many a death; and I can safely say that I have frequently heard the most ridiculous arguments as to his age, some asserting him to be three or four years old, and others saying he is ten and upwards. For my own part, of late years I have not seen a stag of ten years old, nor do I think that any one in the county can show me one; that they do live to the age of ten and upwards I do not for one moment dispute, but if anyone possesses a head of a stag of that age I should very much like to see it. Another error which I have frequently heard persons assert is, they know him to be an old stag because he is hoop-horned; but are these individuals aware, or will they believe, that this is not a mark of old age, but of youth, as most of the male Red-deer, from two to three years old, are what they call hoop-horned?

“But now the question comes, Can a stag's age be known by his head? I believe it can up to a certain period, but only by those who have studied it. The latest publications, wherein it is said that a male deer has no horns in his first year, are in error, as I have already remarked, and the statement appears to have been copied from older writers, where the same error has been committed. But when the first two or three years of the animal's life have been so confounded, is it to be wondered at that mistakes should arise as to his age? It has also been asserted that an animal which has been kept in a park or paddock will at three years old present the appearance of



a stag four, or even six, years old; but this is likewise incorrect. The one I had was kept, as is well known, for nearly seven years in a dry land field facing the south, of less than one acre, with a shed for him to go into, with not a drop of water in the field, nor ever having any given him (*and no artificial food*)—nothing but the natural grass of the field. When he was first put into the field there was a small mow of hay in one corner, which remained there for two years; as he never touched it, it was taken away and given to the cattle.

“This animal therefore lived under great disadvantages, having nothing but the same piece of land to graze over year after year, summer and winter, so that he was not (as has been misrepresented) kept highly fed, but the contrary, the purpose being to see the natural growth of the horns. And what has the experiment proved? that the character and growth of the horns depend almost entirely on the natural disposition of the animal; otherwise how can it be accounted for that one in his wild and natural state shall have a splendid head, with all his rights, and another quite the contrary? If it is owing to either or both of the parents, there surely must have been as fine heads as the one I possess; but then, I ask, what has become of them? For my own part, I know not where to find one.

“I will now give some particulars of the head and horns in my possession, with some remarks thereon.

“Before the animal was one year old the horns began to appear, about the latter end of May. In the following April these were shed, when they were nine inches long. A very short time afterwards others began to be developed, and in the latter end of April these were also shed, though not both on the same day. These had ‘brow,’ ‘bay,’ and ‘tray,’ upright—altogether upwards of two feet in length. In his *third* year he had the same kind of antlers, with two points on top on one horn, and two and an offer on the other. In his *fourth* year, antlers as before, with two points and an offer on each horn. In his *fifth* year, antlers the same, with three points on each top. In his *sixth* year, antlers as before, with four points on each top. In his *seventh* year (when he was killed), antlers as before, though on one horn the points were not so perfect as in his sixth year. It will thus be seen this deer had seven on each horn, making together fourteen.

“I do not think there is much difference in the points, &c., up to ten years of age, but the beam increases in size, antlers, &c., in length. After that age I believe the horns get shorter and wider at the spread.

“In judging a stag’s age it must be borne in mind that, by the increase of the base of the horn or coronet, and projection of the burr, with the size of the beam, the greater distinctness of the superficial furrows, together with the length of the antlers and number of points, a stag’s age may be nearly ascertained, but then only up to a certain period.

“The head and horns of the animal just spoken of were exhibited at

the Bath and West of England Agricultural Show, held at Barnstaple in 1859.

"It has been shown that the hind brings forth her calf in May or June, but, as far as I have been able to ascertain, she does not drop her calf until July or August; at all events, the one I had was not dropped until the latter end of August.

"As my sole purpose in publishing this treatise is to correct statements which have been hitherto published respecting the growth of the horns, with the antlers and number of points, I have not thought proper to enter on the mode of hunting the Red-deer, as practised in Somerset and Devon, and have in addition only to observe, if anyone doubts the statements I have advanced, let him procure some male calves and rear them as I have done this one, and by close observation he will then see whether I am in error, and, if so, where. Surely there are plenty of persons in the world possessing the means, provided they have the will and inclination, to keep and study the Red-deer, respecting which there yet remains a great deal to be learnt.

"There certainly is not a more noble creature existing than a seven- or eight-year-old stag (with all his rights—which, by the bye, is not now to be seen), especially on his first being roused and breaking the covert, just after he has lost his velvet, which takes place early in September. Indeed it is a sight which must be witnessed to be described; and the pursuit of such an animal is well worthy of royalty, as it was wont to be in ancient times.

"I last season witnessed a most splendid chase of several hours, after which the stag was taken in a bedroom at Minehead, and I was somewhat surprised on viewing his head—having a 'brow' and 'bay,' no 'tray,' with three points on top of one horn, and two on the other—to find his beam small and antlers short, while the horn was of a dark colour. Now, how can this be accounted for? I believe from the following:—A few years since I was informed that a number of Red-deer (which I then understood were foreign, but have since learnt were from Cheshire) were procured and set free among the different herds of wild deer in Devon and Somerset. These stags (for I believe they were mostly, if not all, male deer) had shorter horns, with generally only a 'brow' and 'tray,' and of a dark colour. I once saw a pair of their horns, but they bore no comparison to those I had hitherto had under my inspection. Why, or for what reason, the animals were obtained and so mixed, I know not. (Query). Were those animals of a larger frame? If so, their horns were very inferior. Those above described derived their dark colour, I have not the least doubt, from the imported stock. This will make a vast difference in the horns and head of the future stags, and much further investigation will be required towards settling the question, so as to be able to judge of a stag's age by his horns;

for in my opinion this cross will always continue to be more or less marked, just as various marks may be seen in sheep and cattle, when the breed has been crossed. Does it not tend to prove it is the natural disposition of the animal? Surely it cannot be said it is owing to his keep or pasturage, or age; for as I have before stated, the number of antlers which a stag has in his second year, continues throughout the growth of the horns, and the ones he is then deficient of he never regains; so that if he has his 'brow,' 'bay,' and 'tray,' they will continue to be developed in the same manner, though there may be some slight variations in them, and possibly in each of them. If he has only his 'brow' and 'bay,' he never gets a 'tray,' nor does he get a 'bay' if he had only had 'brow' and 'tray' in his second year: this I believe to be strictly correct as far as my observations have been carried.

"Having said thus much as regards a stag's head, horns, &c., I feel bound to bestow my humble meed of praise on the present pack of stag-hounds latterly hunting the counties of Devon and Somerset, and also to add that the greatest credit is due both to Babbage the huntsman and Arthur the whip for the command which they have over their hounds, and likewise for the manner of hunting them. Indeed it is a sight worth riding miles to witness; and in conclusion I wish them health and strength, with plenty of deer, and support for many years to come.

"I certainly differ from some who fancy the Red-deer must soon be exterminated, for I believe if the landed proprietors in Devon and Somerset would unite and fence off certain portions of waste land, together with sufficient quantities of woodland and plantations where the deer may be harboured, and not disturbed by sheep, dogs, or poachers, that there may be always plenty of deer.

"The farmers also in these counties ought to consider where hunting is practised, that it not only gives a stimulus for rearing and breeding good horses, but also, if I may be allowed the expression, will be the means of bringing 'grist to the mill.'

"That the deer are not generally such close feeders as some have represented, I think, will appear from the small space of ground the one I had was kept in, though in their wild and free state they have a much larger space to roam over, and feed at their will."

Dated Lynton, July, 1866.

With the Roebuck, the first horn which appears is a single short prong with a small burr at the base. The following year this prong, or rather the new one which supplies its place, curves backward and throws out a tine rather above the middle, and pointing forwards. In the succeeding year a second tine is thrown out a little higher up and pointing backwards; the main

stem, or "beam," as it is termed, continuing upwards and curving slightly forwards. Each horn therefore has three well-



FIG. 1.

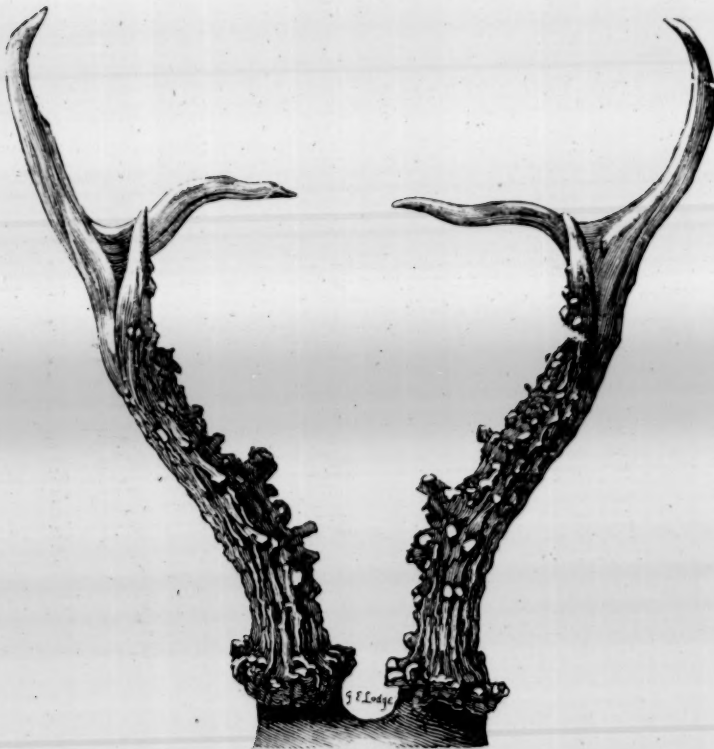


FIG. 2.

developed tines, and this is the usual and normal condition of horn with the adult Roebuck (Fig. 1). An animal with a head of



this character, carrying three tines on each horn is called by German sportsmen a "six-ender," and this number of "ends," or as we call them "tines," is very rarely exceeded. Old writers on hunting sometimes refer to "eight-enders" in cases where an additional tine appears midway between the one first thrown forward and that directed backwards; and Blasius even gives an illustration of a "ten-ender," in which there is a bifurcation of the tine thrown backward, as there is of the main stem towards its extremity. Such heads, however, must be very uncommon, and are said to be unknown in Germany. Blasius speaks of their having been met with in Servia (Sclavonia) and Croatia.



FIG. 3.

Roebucks with very long and heavy horns are found in the Ural, the Altai, and in Great Tartary; but, notwithstanding their abnormal size and weight, would all be described, I believe, as six-enders. (See Fig. 2, which has been drawn to the same scale as Fig. 1, for the purpose of comparison.) Fig. 3, although not so symmetrical, represents an unusually fine large head for a Roe.

It is a curious fact that abnormal growths of horn are more frequent amongst Roe than with Red-deer. It is difficult to say

why this should be so, but such appears to be the experience of both English and German sportsmen who have devoted themselves to the pursuit of these animals. It may be due indirectly



FIG. 4.



FIG. 5.

to the different habits of the two species; for as an abnormal growth of horn must be occasioned either by disease or by direct



FIG. 6.



FIG. 7.

injury to the horn itself while still soft, or "in the velvet," as it is technically termed, it would follow that the species whose habits would be most likely to subject it to accident would most

frequently exhibit an abnormal growth of horn. Now the Roe-deer is a timid, shy creature, keeping much to the woods, easily



FIG. 8.



FIG. 9.

taking alarm, and dashing off suddenly into the thicket at the approach of an intruder. Nothing is more probable than that



FIG. 10.



FIG. 11.

Roe-deer constantly injure their horns while "in the velvet" by coming in contact with some opposing bough during hasty flight.

Red-deer, which are not so much attached to the woods, and are more circumspect in all their movements, would be less likely to meet with such mishaps.

It may, I think, be fairly assumed that in all cases of abnormal growth wherein the antlers are asymmetrical (as in Figs. 4 and 5, and Figs. 6 and 7) the abnormality is due to direct injury to the particular horn which is distorted or affected. But in cases where the horns are symmetrical and yet abnormal in character (as in Figs. 8 and 9) the abnormality is probably to be traced to some peculiar physical ailment whereby the growth and proper development of the horn is arrested or interfered with at a critical stage.



FIG. 12.

The size and weight of antlers will doubtless depend much upon the nature and quality of the food available, and will vary in proportion to the supply of phosphate of lime secreted in their formation.

A third class of abnormal growths (as in Figs. 10 and 11) is not to be explained as due either to injury or disease. In Fig. 10 we see *two pairs* of horns springing from the same skull, one pair directly above the other, and both fairly symmetrical, although not quite normal in character. In Fig. 11 we see a coalescence of the burrs of what should have been two independent horns,



and a union of the two beams into one in the centre of the forehead with a subsequent bifurcation and development of a single tine on each prong of the fork.

The specimen from which this drawing was made is probably unique; and I may take this opportunity of stating that all the heads here figured as remarkable (with the exception of Fig. 13) may be seen at the present time in London, at the well-known Auction Rooms of Mr. J. C. Stevens, 38, King Street, Covent Garden, who has on view and for sale a most extraordinary collection of Red-deer and Roe-deer horns from Germany.

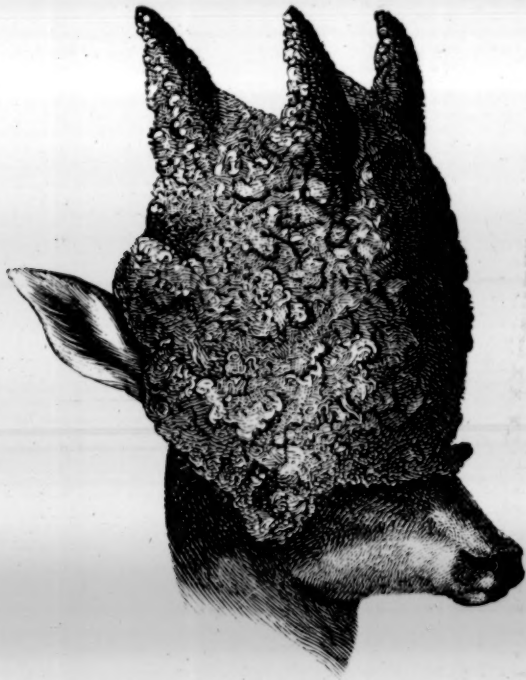


FIG. 13.

This collection, numbering about 600 head, is the property of Dr. Leo von Klipstein, of Giessen, who inherited it under the will of his uncle, Colonel Geoffroy von Klipstein, a great sportsman, who spent fifty years in its formation.

These horns, it appears, were not all procured in one district, but were obtained at different times in various parts of Germany and Austria. There are, of course, amongst them, a good many heads of the normal type which have been preserved simply as sportsman's trophies; but there are also amongst them some very singular and remarkable antlers which are well

worth going to see. Sportsmen and naturalists should not miss the opportunity of examining so good a collection of German Deer heads.

From so large a series it was a somewhat difficult matter to make a selection for the draughtsman and engraver; but through the courtesy of Mr. Stevens, who gave every facility for the purpose, a dozen heads have been picked out which are all notable in their way, some of them, probably unique.

As a sequel to Fig. 12, showing the appearance of a diseased growth of horn, I have added another (Fig. 13), copied from Dr. Altum's 'Forstzoologie' (i. p. 365), illustrating a case in which the horny substance (phosphate of lime and gelatine) has exuded over the top of the head, covering the upper portion of the face like a mask, and depriving the animal of the sight of one eye. This very remarkable specimen was alive when found and secured by his Royal Highness Prince Frederick Charles of Prussia, in December, 1872, near Potsdam.

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## THE FINWHALE FISHERY ON THE COAST OF FINMARK.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

Most people who have paid the least attention to the *Cetacea* are aware of the existence of the veteran Norwegian sailor Herr Svend Foyn, and associate his name with the invention of gear enabling him to cope successfully with the large and active Finwhales, a family hitherto usually let alone by whalers as too dangerous for the known appliances of their craft; and are also aware that he established a very successful whaling business at Vadsö, on the east coast of Finmark. But the number of persons (beyond the actual whalemén,\* and natives of the North of Norway) who know anything about the fishery,—extended within these last two years by the expiration of Herr Foyn's patent-rights,—may be almost reckoned on one's fingers.

As very few persons have visited the scene of the whale-factories, and no account has been published in England, so far as I am aware, and as I am, I believe, the first amateur who has

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\* The whalemén are none of them natives of the North of Norway, but all come from the south—from Sandefjord and Tönsberg.

seen a whale captured by this new system, some account, however imperfect, of what I saw there may be of interest.

Herr Foyn's exclusive rights to the fishery on the Finmarken coast terminated at the end of the season of 1882, but he allowed some companies to start whaling that season. Last year (1883) was the first open season, and various companies, all got up in Sandefjord and Tönsberg in the South of Norway, tried their fortunes, and at least in most cases I believe did extremely well from a commercial point of view. One Russian steamer was also engaged last season in this fishery; and this season there are to be several, I understand.

It is now about sixteen years since Herr Foyn established his factory at Vadsö, which is situated far up Varanger Fjord; at that time the fjord was a favourite resort of the huge Sibbald's Rorqual during the summer. This is now quite changed; constant hunting and harrying has taught the survivors to keep outside in the open sea. The new factories therefore were established at Vardö, with a few at other convenient situations\* on the north coast; they are therefore much closer to the cruising grounds of the whales, so that when one is killed all the long miles of towing up the fjord are saved.

Most of the whaling companies' factories at Vardö are known by the name of their resident manager, all of whom are, I think, sea captains, with the exception of one, and this company is almost or quite the only one which has not paid this season. Besides these, there are some whaling establishments in West Finmarken, where, however, Sibbald's Rorqual is not common.

Arriving at Vardö in the middle of August, I was quite at the end of the season, and too late to see much of the chief object of the "fishery"—the huge Sibbald's Rorqual, or Blue Whale as it is called in Norway, and which latter name seems decidedly preferable for ordinary use.

I met with great civility and kindness from all the owners and managers of the whalers; my thanks are especially due to Captains B. and S., to whose kindness I am indebted for a cruise in one of the steamers; other kind invitations I was unable to avail myself of, owing to the season coming to an end. I propose to give some account of this cruise, and then to give

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\* At Sylte Fjord, Jar Fjord, &c.

such particulars as I was able to note about the different species of *Balenopteridæ* found in those waters.

We weighed from Vardö on the evening of August 26th, and, leaving the Sound by the north entrance, made for the N.W. The harpooner went up to the crow's nest while we were still in the sand, and almost immediately saw a steamer hunting a whale; we steamed steadily ahead, and in the course of the evening we saw three other whalers, one of which turned into Sylte Fjord, where there is a factory. At ten o'clock, the nights being already by this time of the year dark, the fires were let down, and we ceased steaming, the vessel being allowed to drift while it was too dark to see whales. We were under steam again by three o'clock the next morning, and some time later the harpooner (from aloft) saw a Common Rorqual, which spouted three times and disappeared. At about eight o'clock a Humpback Whale (*Megaptera*) was sighted, so we turned after it towards the north, across the bows of another whaler; at 8.30 the whale rose and blew close on our port quarter; it next rose a little ahead of us, and when it dived again we stopped. The harpooner, who remains at the crow's nest for hours at a time if no whale is sighted, comes down from aloft as soon as a chase commences, and remains as it were glued to the gun fixed at the extreme forward end of the forecastle; he cannot even go below for his meals, but has to snatch as best he can a hunk of bread and meat brought him by the steward. The whale next rose close on the starboard bow, heading to starboard. The harpooner slewed the gun round as quick as lightning and fired, but the whale (as small ones are said frequently to do) swerved at the moment and the harpoon missed it, though it received a "smack" from the shank of the harpoon, slightly grazing the skin. It instantly dived, and next came up 150 or 200 yards away, when it screamed more from fright than pain, I fancy, and then disappeared. We hauled in the line, and proceeded to reload, which latter operation takes all hands just half an hour to accomplish.

This is perhaps the best place to attempt a description of the harpoon, and the gun from which it is fired. The harpoon-stock (all of iron) is about five feet long. It has two pairs of folding flukes, barbed, lying at right angles to each other; the butt end of the shank is enlarged and flattened at the extremity like a



ramrod. A slit is carried for about three feet lengthwise through the shank, in which travels a ring or grummet made of coils of thin iron wire, to which the whale-line is attached. Forward of the end of the slit a joint is formed by two large rings. This joint is rendered rigid, however, when ready for firing, by firmly lashing the ring of the anterior part back to the end of the slit. This lashing is broken by the movement of the whale after the harpoon has entered it, allowing the joint to have free play, and at the same time the resistance offered by the lashing before it parts breaks the force of the otherwise sudden strain on the rings. In front of the second ring come the barbs before mentioned, and the shaft terminates in a screw-worm, the fore end being hollow to the depth of about six inches. Into the hollow is fitted a tin cylinder about five inches long, containing a small glass specimen-tube covered with india-rubber piping, which on the fracture of the glass tube comes in contact with fulminating powder, which then explodes. The fracture of the glass tube is brought about by the meeting in the middle line—inside the hollow end of the harpoon—of the inner ends of the larger pair of folding flukes, which are continued inwards beyond their pivots. On to the worm at the hollow end of the shank is screwed a conical iron shell nine inches long, which is filled with gunpowder, and this is exploded by the means just mentioned, assisted by a little powder added as a priming inside the worm. Into the fore end of the shell is screwed a three-side spearhead like a ploughshare, four and a half inches long; an older pattern, as used by Herr Foyn, is shaped like an ordinary spearhead—*i. e.* flat.

The explosion takes place when, after the harpoon has entered the whale, sufficient strain is brought on to the line to cause the lashings by which the flukes were previously held down to break, and allow them to open out; the inner ends of the larger pair then almost meet in the middle line, and, squeezing the glass tube, break it as before described.

The harpoon-cannon works on a pivot fixed on the forward end of the forecastle. There is no bowsprit or forestay: a kind of platform projects over the bows on either side, giving room to the harpooner to stand and turn the gun well round to either side. Over the stem projects a square sheet of iron, lying at a slight angle forwards; on this about twenty fathoms of the

whale-line (which is fully double the thickness of the whale-line used in the Greenland fishery) is very carefully coiled down, and lashed in place with spun-yarn, which breaks directly the line gets the least strain on it. The sheet of iron is hinged, and when steaming in rough weather through a head sea the harpoon is removed from the gun and the iron turned up, so as to protect the gun from the seas.

The cannon has naturally to be very strong, and was in this instance  $4\frac{1}{4}$  inches thick at the muzzle. The charge of powder is 15 "lod," and is kept ~~ready~~ measured off in round canvas balls about the size of a cricket ball. The recoil is taken off by pads of gutta-percha several inches thick at the rear of the trunnions. A pistol-stock shaped handle is fixed to the breech to aim the gun with; the details, such as percussion-caps, &c., vary, I believe, in the guns of almost every company; but I have, I think, attempted a description of every important point.

(To be continued.)

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#### ORNITHOLOGICAL NOTES FROM NORFOLK.

By HENRY STEVENSON, F.L.S.

A BAD season for the shore-gunners means, always, brief notes for the naturalist; and both before and after Christmas, in the winter of 1881-2, an almost total absence of "hard-weather" fowl, and a singular scarcity of Fieldfares and Redwings, were readily accounted for by November of 1881 being the mildest and warmest for many years.

In the first week of January, 1882, I heard of two or three Waxwings, seen or shot, near Holt, and one at Lamas, near Cromer, indicating, as I have before observed, that the advent of this beautiful but irregular migrant is by no means confined to severe winters.

On the 6th a Common Buzzard appeared at Northrepps, and a large Raptor, seen at the same place on the 30th, was, possibly, a Rough-legged Buzzard, of which species one had been shot at Fulmodestone on the 14th. Of wild-fowl, the only entries I find worth notice during this month are a male Gadwall, at Salthouse,

on the 6th, and another at Hickling on the 14th, the latter, in all probability, bred in this county.

On the 22nd a Snow Bunting was shot at Cromer, which had already begun to assume its breeding-dress,—an exceedingly early date.

March followed suit as to mildness of temperature, and the first three weeks were altogether foreign to its usual character.

On the 1st, at Gunton, near Cromer, a solitary Brambling was seen consorting with a flock of other small birds; and on the 4th and 6th Hooded Crows, in some numbers, were observed passing southwards, near the coast at Northrepps. By the 12th some thirty Rooks' nests were completed in Brundall Wood, and about twenty more by the 16th; and young Herons were hatched at Taverham prior to the 25th. Of the earliest summer migrants, the Wryneck was heard in Cossey Park on the 20th, and the Willow Wren and Chiffchaff at Northrepps, about the same date.

Snow Buntings, in small numbers, remained along the coast at Yarmouth till late in the month. Redshanks were clamorous in the marshes quite early in March, and Lapwings' eggs were in Yarmouth market by the last week of the month.

April was not a pleasant month, the weather variable, and mostly cold and wet, with a prevalence of north and north-east winds. Two or three Magpies were seen at Fornsett on the 1st of the month; and one or more of that species were observed at Northrepps, on the coast, throughout the winter. Of the dates of arrival of summer migrants, I may quote the following from various correspondents:—Cuckoo, 14th, at Northrepps; Nightingale, 16th, on the Ipswich and Unthank's Roads, Norwich, and Reepham a few days earlier, Thorpe 20th, Keswick and Yarmouth 22nd; Blackcap, 10th, Woodbastwick; Swallow, 18th, Keswick, 19th, Thorpe River; Sand Martin, 19th, Thorpe River; Redstart, 16th, Eaton. On the 21st, at Eaton, a bright spring day, with a south-west wind, I heard and saw, in the sheltered copse of "Blue-bell Hole," Nightingales, Redstarts, Willow Wrens, Blackcaps, and Chiffchaffs, and three Red-backed Shrikes on a neighbouring fence. Neither in the village nor on the river did I see a single Swallow, or Martin of either species.

A few Hooded Crows still remained at Northrepps into the second week of April; and a Woodcock was flushed there on the

10th. A large number of Pied Wagtails appeared at Yarmouth about the latter date ; and early in the month a Water Rail was caught alive on board a smack, just off the coast. During the first week, also, the puzzling occurrence of French Partridges, seen to come in from the sea with a strong easterly wind, and, as usual, in an exhausted state on arrival, was observed on the beach at Yarmouth, and I have notes of a single bird, seen to fly in from the sea, at Lowestoft in March, and, in the same month, a small covey of this species arrived on the sands at Cromer, in like manner, and crept into any holes they could find for shelter. Being birds of rapid but not sustained powers of flight, as is well known to sportsmen, it is not easy to conjecture, if continental immigrants, from whence they come. We have no record whatever of this Partridge being found in the Eastern Counties till eggs were imported at the close of the last century, and as when Sir Thomas Browne wrote just two hundred years ago it was not seen in Norfolk, I still incline to the theory advanced in the 'Birds of Norfolk' that these apparent visitants are but residents after all, seized with a restless migratory impulse in spring, and daunted by the vast expanse of water, as they pass out to sea, swerve round again towards the land, and alight in the exhausted state in which they are usually found. Some of our immigrants, also, may cross the Wash, from the Lincolnshire coast, or arrive from still more northern counties.

A Hobby was observed at Northrepps on the 16th of May, and of spring migrants amongst the Waders on Breydon "muds" the Whimbrel was seen on the 3rd, Turnstones on the 10th, and both Common and Green Sandpipers on the 13th ; and on the 16th and 17th a Greenshank and some Bar-tailed Godwits, all these putting in an appearance about their accustomed time, as the 12th of May is known as "Godwit-day" to the shore-gunners. Somewhat later, Grey Plovers and Pigmy Curlew were also seen at Yarmouth in summer dress ; and three Avocets were said to have been seen, and one Spoonbill shot, the Bird Protection Act notwithstanding. A flock of Black Terns were observed on the 22nd, hovering over the river between Brandon and Lakenheath ; and on the 28th a large flock of Common Curlew were seen passing at Northrepps.

On the 29th Mr. J. H. Gurney, Jun., found the larder of a pair of Red-backed Shrikes, at Northrepps, their prey spiked, as



usual, on the thorns of a fence ; and this within a few yards of the spot where he had noticed the same occurrence, in the previous summer,—a tall fence, on the road near the Cromer Station.

A stay at Cromer, from the 12th of May to the 9th of June, afforded daily observation of bird-life in that neighbourhood ; and renewing acquaintance with that well-known and genial old fisherman, Billy Mayes, I learnt from him, when at sea in his crab-boat, many interesting facts, both as to sea-fowl and sea-fish.

On one occasion I saw a few adult Greater Black-backed Gulls, passing rapidly, with an evident purpose in view ; and I believe, from many former observations, that with an instinctive knowledge of the ebb and flow of the tide, these Gulls come for miles to exposed feeding-grounds near Yarmouth, and work back again, late in the day, to roost on the extensive sand-hills about Blakeney and Cley.

Mayes tells me that about the month of October, the fishermen see Gulls by hundreds, day after day, flying in the direction of Blakeney, late in the afternoon, where he has seen them congregated in great numbers ; but, as at that season they never see them going in the other direction in the morning, he supposes they must pass along the coast earlier than even the fishermen are about at that time of the year. Early in May he had seen Guillemots out at sea, off the Cromer lighthouse, passing northwards, no doubt to their breeding station at Flamborough, from whence, in the breeding season, as the fishermen assert, they pass regularly for food down to Yarmouth Roads. At different times when fishing out at sea, he has seen various species of birds coming over the sea, and making direct for land, more or less exhausted ; and amongst them he mentioned Starlings, Rooks, Sparrows (Tree Sparrows, probably), Chaffinches, Swallows, and Martins, and the tiny Gold-crested Wren. Rooks he had seen settle on the waves, as if to refresh themselves, as is frequently the case with the Swallows, dropping their feet into the water, and raising their wings at the same time. He has seen French Partridges making for land, but never saw or heard of an English Partridge in flight over the water.

One morning a small flock of the Common Gull, and on another, of Black-headed Gulls, all birds of the previous year, were hovering over and settling on the waves, within gun-shot of the beach, attracted, no doubt, by the fish-offal thrown overboard

by the fishermen before coming ashore; and I noticed, also, that a few old Rooks on the Runton beach came regularly to feed on the same diet, when washed up by the tide. This is a common habit with them in the autumn and winter, in company with the Grey-back Crows; but I had never noticed it before in the nesting season.

On the 4th of June, an adult Night Heron was seen by Mr. Cremer, at his pond at Beeston. At Palgrave, near Diss, my friend, Mr. Ringer, had his attention drawn to the note of the Wryneck, and on tracing the sound to an old Scotch fir in the churchyard, he saw two of these birds, sitting, one above the other, each on a short, broken branch projecting from *the trunk*, and as they uttered their notes with a curious elongation and twisting of the neck, they seemed to lean hard against the bole of the tree; and this they continued to do till he was tired of watching them.

(To be continued.)

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#### ORNITHOLOGICAL NOTES FROM SWITZERLAND.

BY W. WARDE FOWLER, M.A.

THE following notes, made by me in Switzerland last summer, may perhaps be of interest as supplementing the observations on Swiss birds recently contributed to 'The Zoologist' by Dr. Hamilton and Mr. Backhouse.

While visiting Stanzstadt, on the lake of Lucerne, on the 26th June, 1883, I observed a pair of Blue-headed Wagtails, *Motacilla flava*, by the lake. The landlord of the hotel showed me a fine Bittern, shot by himself, but said it was not a resident species.

On the road to Engelberg, on June 27th, Buzzards, Magpie, Redstart, *Ruticilla phœnicura*, and Marsh Tits, slightly different in colouring from ours as I fancied, the white on the throat and sides of the head occupying a larger space. In the Bern Museum is a variety, more resembling *P. ater*, and wrongly marked "*P. borealis*, var. *alpestris*, Bailly." See Prof. Newton in Yarrell's 'British Birds' (ed. 4, i., p. 49).

June 28th.—At Engelberg, Black Redstarts, *R. titys*, Whinchats, and Tree Pipits were all abundant. We heard a single

Cuckoo. In an opening in a wood a huge bird passed slowly over us at no great height, enabling me to see it frequently from below with my glass. This I believe to have been a Golden Eagle, *Aquila chrysaetus*, for my guide, who knows the bird well, saw one near the Engstlen-Alp the same day. I afterwards saw one alive in a cage on the Wengern-Alp.

June 29th.—Joch-pass. Heard the Chiffchaff on the Pfaffenwand, more than 5000 ft. above the sea. In these higher regions a Pipit is abundant, which, I feel pretty sure, is *Anthus spinoletta* (Linn.). It frequented well-watered pastures, and would perch on stones, or on the very top twig of a pine, and to the best of my belief was neither *A. pratensis* nor *arboreus*. More puzzling was a bird which my observant old guide, who now joined us, called an "Alpen-lerch;" this bird made a trilling noise when sitting on a stone, and would then mount and sing on the wing. A skin since forwarded to me by the guide proves this to be *Accentor alpinus*. It was abundant on and about the Joch-pass, where I hope to give special attention another season.

My guide wrote of this bird: "The brown bird I sent you is called here in our common speech 'Bliemtrittel;' it has this name because, when it is in the valley (*i. e.*, in winter), it often haunts barns, and there picks up the 'Bliem'—that is, the blossom-dust that is found under every heap of hay. In the books (*schriftweise*) it is called '*Alpenlerche*.' Old Professor Dollfus used to call it 'the tourists' guide,' because we see it in summer on the high mountains, which, like the tourists, it leaves in winter for the lower grounds. I shot the specimen I sent you close to my own house (just out of Meiringen) at the beginning of January. We saw the bird on the Engstlen-alp when you were with me last summer. It sits usually on a stone, where it sings with a sweet voice; it does not sing on the wing. [This, I think, is a mistake. W. W. F.] It builds its nest among rocks and stones in the mountains in the summer; the nest is of moss, and the hen bird lays, I believe, beautiful pale blue eggs. When it is in the valley in winter, we find it sometimes here and sometimes there, but the one I sent you is the only specimen I have seen this winter. The reason of this is no doubt to be found in the beautiful mild weather we have been having, which has enabled the little things to make a long stay in the mountains.—Johann Anderegg. Meiringen, Feb. 24th, 1884." [Translation.]

June 30th.—Engstlen Alp. (7000 ft.) Here were a few Ring Ouzels (which descend to the valleys in winter, but according to my guide do not leave the country) and Cole Tits, *P. ater*. I talked with the guide about migration; he told me of twenty-two Redstarts having been found in a hollow cherry-tree in Canton Valais in winter, all in a cluster. We talked of the beautiful red-winged Rock-creeper, *Tichodroma muraria*, and he told me positively that it loses the end of its long bill every autumn, and that a new one grows rapidly. He says that he told M. Fatio (a Genevan naturalist) of this, and on his disbelieving it sent him specimens to prove it. I afterwards found in the Bern Museum a specimen which had lost the end of its bill. Here also were Redstarts, chirping their little song from the roofs of the chalets, in which they build and bring up young even before these upper pastures are visited by human-kind in early June. I see that Bree ('Birds of Europe,' vol. ii., p. 6) gives a "Grey Redstart," *R. Cairii*, which exactly answers in appearance to some of these on the Engstlen Alp, which I took for young of *R. titys*; and this *R. Cairii* is there said to inhabit the highest Alps, 'where it breeds in old isolated chalets and huts, where one never sees by any chance a specimen of *R. titys*.' I certainly do not remember to have seen any specimens of the adult male of *titys* on these Alps; yet it seems to be now agreed that this mountain bird is not a distinct species.

July 1st.—Engstlen to Meiringen. The guide was much taken aback by the rising of five wild ducks under his nose while he was enjoying an early pipe this morning; this was at a little pool of melting snow water about forty paces from the inn. From the feathers they left I should say they were Teal; but Switzerland boasts of a great variety of wild duck, as I learn from the Bern Museum. We had looked for the Crested Tit, *P. cristatus*, yesterday; my guide tells me it is a rare bird even here. To-day, however, he detected it, keeping eyes and ears on the look out, and I had the great pleasure of watching a family of these birds. The note is very much like that of *Acredula caudata*; motions and gestures as like those of *P. caeruleus* as possible. Its black collar also reminds one of the latter. The female seems to be much browner than the male, whose prevailing colour is bluish grey; in fact the guide erroneously described to me two species, one grey and the other brown. He was right, however, in telling



me that it is not a shy bird; it allowed me to come quite close without getting alarmed.

July 2.—Meiringen. *Certhia familiaris* abundant in the apple trees; Marsh Tit and Robin. A little Warbler, very slender, but otherwise looking very like the Chiffchaff, was singing a somewhat tremulous note in the hazel bushes and brushwood on both sides of the valley; i.e., near the paths to Hasliberg and Rosenlain. As the note was strange to me, and as it could hardly have been that of our Wood Warbler, I have consulted Bree, and find there figured a bird which closely corresponds, viz., Bonelli's Warbler, *Phylloscopus bonellii*, which is said to be common in Switzerland, and to prefer wood-covered hills, alders, hazels, &c., and to have a very monotonous note. I shall hope to examine the bird more closely next summer.

July 3rd.—Rosenlain. Pair of Yellow Wagtails, with black or dark heads, and therefore probably *M. flava*, though much yellower in general appearance than those I saw at Stanzstadt. I saw a Missel Thrush on the top of a pine; also some round holes in an old pine, made (so said the guide) by the Great Black Woodpecker, *Picus martius*.

July 5th.—Grindelwald to Wengern Alp. Heard a Robin sing with two Cuckoo-like prefatory notes, repeating its song many times. A little further on I found a Ring Ouzel singing the same two notes from the top of a pine; was Robin imitating? My guide suddenly declared he saw a "Gold-amsel," a rare bird he had only seen two or three times. We left the path and stalked this bird, and I saw at last a bird of the size of a Blackbird, with yellowish tints about it, flying from one bush to another. This was very likely the female of the Golden Oriole, *Oriolus galbula*, many specimens of which I saw in the Bern Museum afterwards. It must have been the male which caught the guide's sharp eye, but we could not find it. This was at a height of about 6500 ft.

July 6th.—Lesser Scheidick. Here I saw a pair of Snowfinches, *Montifringilla nivalis*, close to the glacier which descends from the Eiger, the only ones I saw this year. I have seen them in flocks on the Gemini Pass, and very beautiful they are as they rise together in the sunshine. I call them Snow Finches, though both Snow Finches and Snow Buntings were in the Bern Museum, and I could not have clearly distinguished the two at the distance I was from this pair of birds; but Prof. Newton (Yarrell, vol. ii.,

p. 8) leads me to suppose that the Bunting is of exceptional occurrence in Switzerland.

July 7th.—Wengern Alp. The *Corvidæ* seem partial to this place; we saw a Raven, Crows, and Alpine Choughs—the latter always three together. At this hotel is a Golden Eagle (Steinadler) in a huge cage. The gigantic cliffs opposite are said still to afford protection to a stray Lämmergeier, *Gypactus barbatus*.

I was not able to go to Mürrur, as I had intended, but it is worth noting that the landlord of the new hotel there has an admirable collection of Alpine animals, which he will gladly show to anyone who wishes to inspect it. We returned home by Bern, where Spotted Flycatchers, *Muscicapa grisola*, were building their nests in the garden corridor of the Hotel Belle-vue. The Museum afforded me plenty of occupation during the two hot days I spent here. We returned to England without further opportunity for making observations.

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## NOTES AND QUERIES.

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The proposed Marine Biological Laboratory.—As we have already mentioned (p. 270) an Association has been formed which is collecting funds for the purpose of promoting marine biological study, and we cannot doubt that its objects need only to be widely known in order to receive the encouragement they deserve. The harvest of the sea is only less important to the people of this country than that of the land and the study of marine biology is to the one what the study of agricultural science is to the other. The life and habits of the fish on which we feed are still for the most part shrouded in mystery. Fishermen go mainly by tradition and the rule of thumb. They know empirically where certain fish are to be found at certain seasons, and provided they secure a good haul, they trouble themselves as little as possible about the causes which produce it or the conditions which favour it. They cannot be persuaded that Science has anything to tell them which they do not know already, and they have the common distrust of practical men for scientific methods and conclusions. The researches already made, however, in foreign marine laboratories have incontestably proved the value of such institutions having resulted in promoting the supply of Oysters. It has long been known that the Oyster of Northern Europe is hermaphrodite, and that its eggs are hatched inside the shell of the parent, the young being thus carried and protected until they are so

far developed as to be ready to fasten themselves on a rock and to live independently. It follows, of course, that the continued existence of the parent is indispensable to the life of the young Oyster, and that Oysters of this particular species cannot be artificially bred. It does not follow, however, though the inference was hastily drawn, that all Oysters are of the same unaccommodating nature. If Oysters could be found as careless of their offspring as the Salmon, the Herring, or the Mackerel, it would not be difficult to increase the supply by collecting and cultivating the eggs. This discovery has been made by Prof. Brooks, of the John Hopkins University at Baltimore, by means of the marine laboratory attached to that institution. European visitors to the United States are agreed that the Baltimore Oyster is the best in the world, and Prof. Brooks has ascertained that in this particular Oyster, and, indeed, in the American Oyster generally, the sexes are separate, and that the eggs, instead of being hatched inside the parent shell, are thrown out into the water in immense numbers, and are then fertilized and developed without further assistance from the parents. This is a scientific fact first discovered in a Marine Biological Laboratory, and its industrial and commercial bearings are manifest. Prof. Brooks was not so successful as Thales, however; he did not himself make a fortune out of his discovery. He succeeded in showing the possibility of fertilizing the eggs artificially, and of rearing the young Oysters until after they had acquired their shells; but he failed to keep them alive until they were able to take care of themselves. The next step in practical discovery was taken by Lieut. Winslow, of the United States Navy, who had followed the experiments of Prof. Brooks, and being afterwards stationed at Cadiz repeated the experiments with Portuguese Oysters, and found that they also exhibited habits of breeding identical with those of the American Oyster. It appears, moreover, that a French *savant*, M. Bouchon-Brandely, the Secretary of the Collège de France, was encouraged to similar experiments by the observations of Prof. Brooks, and that, having reached the same conclusions as Lieut. Winslow, though quite independently of that officer, as to the breeding habits of the Portuguese Oyster, he has overcome the practical difficulties, and has succeeded in producing Oysters of commercial value from eggs artificially impregnated. Similar results have since been obtained by Mr. Ryder, in Maryland, so that the artificial breeding of Oysters may now be regarded as a practical undertaking on both sides of the Atlantic. It would be difficult to give a more satisfactory demonstration of the practical value of marine biological research. The commercial importance of the discovery of Prof. Brooks and M. Bouchon-Brandely is obviously immense, and it opens up a prospect of unlimited extent to the whole gastronomical world. The possible extinction of the unaccommodating "native" may now be regarded with comparative equanimity. Its marsupial habits, so to speak, unfit it for the struggle for existence. Its parental

affection is its ruin. Its place will be taken by the less philoprogenitive but not less delicate bivalve of Baltimore or of Portugal. Meanwhile the contrast between the two may well serve to point the moral of scientific research, and to promote the establishment in these isles of Marine Biological Laboratories. What Science has already done for the Oyster it may well be expected to do in time for many another of our sea-fishes and shell-fishes. The field of research is almost inexhaustible, and Science would be perfectly ready to cultivate it, if once it could obtain the means and opportunities. It is impossible to doubt that the study of the structure and habits of the fishes which frequent our coasts will result in an accumulation of knowledge which must in the end direct and inform the practice of our fishermen. But it is not merely for the increase of the supply of Oysters, or even for the improvement of our fishing industries in general, that the Marine Biological Association has been formed. The object is the scientific study of a branch of Natural History which has hitherto been neglected for want of adequate means and opportunities for its prosecution. The undertaking is a costly one, and it is hoped that the necessary funds will be freely forthcoming.—From *'The Times'* July 9th.

[We understand that the Corporation of Plymouth has already offered a site for the erection of the building as well as a very liberal donation to the building fund.—Ed.]

#### MAMMALIA.

**Wild Cat in Lincolnshire.**—In the spring of the present year I saw in the shop of Mr. W. Barber, of Lincoln, a cat which was received by him in the flesh from one of his country customers. It was shot in the early part of March, 1883, by Mr. Arthur Belton, a farmer living at Bullington, near Wragby, and under the following circumstances:—He was out with his gun in a small plantation near Bullington Wood, when his dog—a small terrier—brushed the animal from beneath a thicket of brambles. Instead of flying the cat at once attacked the dog, which it severely mauled. Seeing his dog was getting much the worst of the combat, Mr. Belton rushed in, on which the cat took refuge in an oak tree, crouching between two branches above the bole; perceiving the creature apparently making preparations to spring, he fired at its face and brought it down. He thinks it is the same cat which had been seen at intervals in the neighbourhood for many years past. Mr. Barber told me that on skinning it he found all the characteristics of a wild animal; the muscles were very strong, red, and highly developed, and the intestine was much shorter than in the common cat. On comparing the animal with the best written descriptions, as well as with a Scotch Wild Cat obtained many years ago in Mar Forest, I have not the least hesitation in stating that it is undoubtedly a genuine Wild Cat, *Felis catus*. It agrees closely in coloration and dimensions with the wild type,



and the only difference that I can point out is that the tail is not quite so full at the end as in some Scotch examples. According to Macgillivray, however, Scotch cats vary in this respect; speaking of the tail, he says ('British Quadrupeds,' p. 191), "Generally as broad to the end as the base, although often narrowed at the tip." In the Lincolnshire example, which is a fine old "tom," the canine teeth are remarkably developed and very formidable; the tongue across the middle is covered with strong horny papillæ directed backwards; ears large and triangular, and directed forward; fur very thick and close, general colour a yellowish grey, with the lateral stripes on the body and limbs a darker grey, two small stripes below the eyes, and four across the head to the nape, which are dark brown, almost black; there is also a black irregular stripe down the centre of the back; and the tail, which is cylindrical and covered with long hairs, has alternate rings of black and grey, the tip for two inches black; feet yellowish, soles black, claws horn-coloured and very strong. Bullington Wood was the last haunt of the Kite in Lincolnshire; a pair nested there in 1870. The Pine Marten still lingers in the district, examples being obtained almost every year. The Polcat is very numerous, also the Stoat and Weasel. The wood itself is one of an almost continuous chain of great woodlands extending from Mid-Lincolnshire to near Peterborough. Much of this district has never been preserved for game, the shooting being left in the hands of the neighbouring farmers. Keepers are few and far between, hence the wild animals have enjoyed an almost complete immunity from persecution. Cats are known to have bred in these woods in a wild state for generations, and there is no improbability that the subject of this notice may have descended directly from the old British Wild Cat. That it should be a reversion from the domestic cat to the wild type is scarcely probable, so closely does it agree with the original wild race, unless we are prepared to allow for a strong admixture of original blood coming directly from pure wild ancestors which at no distant period inhabited the district.—JOHN CORDEAUX (Great Cotes, Ulceby).

**Weasel in Skye.**—At p. 12 of the 'Mammalia of the West of Scotland,' drawn up by the late Mr. Alston, it is stated that the Weasel is absent from all the Western Isles with the exception of Islay, where it is rare. At the present moment the Weasel is well established in Skye. I have seen it trapped in a district where it is more numerous than the Stoat.—H. A. MACPHERSON (Carlisle).

#### BIRDS.

**The Birds of Pembrokeshire.**—As only the county of Carmarthen separates us from the county of Pembroke, it may be worth while to compare those birds which have occurred here, but which Mr. Mathew, in his interesting paper (p. 211), has been unable to identify in Pembrokeshire:

This may possibly assist him to find some of them in the southern and more wooded part of that county. The Long-eared Owl, Tree Sparrow, Hawfinch (rare), Wood Lark, Nuthatch, Green, Greater, and Lesser Spotted Woodpecker, all occur with us; also occasionally the Stock Dove, which is common in Herefordshire. I have also seen the Ring Ouzel, Pied Flycatcher (fairly common), Nightingale, Wood Wren, Garden Warbler (once), Reed Warbler, Redstart, the Pied, Grey, and Yellow Wagtail (common), Turtle Dove, and Wryneck. Regarding this last bird some little doubt has been expressed with respect to its occurrence here by English ornithologists. I have no doubt of it; it has been caught in pole-traps set for hawks in Radnorshire. I myself heard it close to Brecon this year, and have seen its eggs taken from a nest near here this year. It is certainly not common, but, from its excessively shy habits, is often unperceived. The note of this bird, however, when once heard is not easily forgotten. Among the autumn migrants Mr. Mathew has been unable to detect, we have the Siskin (very common last winter), Brambling (one specimen only recorded), Twite, Black Redstart (one specimen), Firecrest, Royston Crow (one specimen), Solitary Snipe, and Green Woodpecker. I have never heard of the Thick-knee or Norfolk Plover in South Wales. With regard to Mr. Dix's list of birds observed in Pembrokeshire, I have no doubt but that he is right as to the Wryneck. Its name in Welsh, "Gwas-y-Gog," the servant of the Cuckoo (or, as it is called here in English, the "cuckoo's maiden"), points it out as well known in Wales. I think the Garden Warbler is very rare here. The Black Grouse, if extinct now, must have been an indigenous bird in all South Wales, and the many blackcock runs one sees there everywhere attest its presence. It is increasing in Breconshire, Radnorshire, and especially in the northern part of Carmarthenshire, where it is now plentiful; it is probable therefore that with a little preservation it may spread into Pembrokeshire. May I ask why Mr. Mathew does not publish a complete list of the birds of Pembrokeshire? It would be most acceptable to ornithologists, and with such an extensive sea-coast as the county possesses, the list of sea birds should be very complete. I hope by the time it appears he may be able to include the Black Grouse among its game-birds.—E. CAMBRIDGE PHILLIPS (Brecon, S. Wales).

**Greenland Falcon in Skye.**—On the 3rd January last a female Greenland Falcon, in immature plumage, was shot at Ardmere, Skye, by my friend Capt. Macdonald, who recalls a similar visit from a Greenland Falcon thirty years previously. It had haunted the neighbourhood for some days, and was sent in the flesh to Macleay, of Inverness, who has mounted it well in a case with a Peregrine, but omitted to take any measurements. I examined the bird last June, but a detailed description is unnecessary.—H. A. MACPHERSON (Carlisle).

**Dotterel in Nottinghamshire.**—Thirty of these beautiful but now rare birds were seen by a farmer in one of his seed-fields about three miles from Nottingham during the last week of April. Having no respect for the Wild Birds Protection Act, he shot three of them; the rest I hope have since reared their broods amongst the Cumberland or Westmoreland hills. I never remember so large a "trip" having occurred in this county before; they generally come in small numbers only once in two or three years.—J. WHITAKER (Rainworth Lodge, Notts).

**Nesting of the Long-tailed Titmouse.**—On the 27th March last I found the nest of the Long-tailed Tit built in a wild rose on the outside hedge of a wood. It was domed but not quite lined, and the entrance also needed some finishing touches. Both the birds were busily engaged in completing the nest. Not unfrequently one of them, arriving with a feather in its beak before the other had finished its work, would wait patiently until its turn came. After adjusting the feather to its satisfaction, and before leaving, it carefully restored the nest to its right shape. So far as I was able to observe both head and wings were used for this purpose, but as nothing was visible but the tail, which projected from the opening in the side of the nest, I could only judge from the strange way in which the nest bulged out now on one side, now on another. Occasionally, when this operation had been conducted with great violence, the bird would cling by its feet to the outside of the entrance, and, after pulling out portions of the fabric, rearrange them, moving the head rapidly from side to side, as if weaving together the disordered part. This nest was finished and contained one egg on April 9th. Another nest I found only just commenced on April 14th was finished and contained six eggs on April 28th. The Long-tailed Tit (*Acredula rosea*) was more abundant in this neighbourhood last spring than has been the case for several years, but I fear several nests were wantonly destroyed. One sent me from Newark, built in a thorn, had the outside ornamented with bits of paper. I have noticed this peculiarity occasionally in nests of the Chaffinch, when built in the neighbourhood of a town.—W. BECHER (Hill House, Southwell, Notts).

**The St. Kilda Wren.**—Having spent three weeks on St. Kilda in June, 1883, it might be supposed that I overlooked the bird which Mr. Seebohm has lately described in this Journal as a new species of British Wren (p. 333). On the contrary, one of my principal objects next to making a complete list of the St. Kilda Flora, which was practically unknown, was to procure a specimen of its Wren to see whether it differed from, or was identical with, the Common Wren of the mainland, or of the Faroes. On my return some short notes were put together and shown to Mr. Howard Saunders in September last, and in these the St. Kilda Wren and the special interest attached to it were particularly men-

tioned, as well as my failure to obtain a specimen. The inquiry would naturally suggest itself to any one aware of the variations of *Troglodytes parrulus*, but my attention was first directed to it two years ago by my friend Mr. A. G. More. That St. Kilda possesses a Wren was not first ascertained by Mr. Dixon, as stated by Mr. Seebohm, for its existence was recorded so far back as 1698 by Martin in his 'Voyage to St. Kilda' [as also in Macaulay's 'History of St. Kilda,' 1764, p. 160.—ED.] A Wren, too, was seen there by Atkinson in 1831 (Trans. Nat. Hist. Soc. Newcastle). It must, however, be rare there and difficult to meet with, for I only came across it six times during three weeks; and I visited every island of the group possessing vegetation, Borrera, Soa, the Doon, and St. Kilda proper. I do not wonder therefore that Macgillivray, who spent four days on St. Kilda, has omitted to mention it (Edinb. Phil. Journal), and that Sir William Milner, who only remained there three days (Zool. 1848), does not make any allusion to it. There is perhaps some danger in giving the exact localities or islands on which I saw this Wren. One, however, may with safety be referred to. Armed with a vasculum and gun I was botanising on the ledges of the great cliff Conacher (1220 feet) wherever it was possible to creep, thus encumbered, when I saw a rope descending over a ledge, and attached above to a rotten peg. Knowing that some men must be Fulmar-catching below I awaited their return, but, losing patience, laid aside the gun and vasculum, and, taking off my boots, descended hand over hand some three or four hundred feet, having first ascertained that the peg was not so rotten as it looked. Going down the rope a Wren flew out of a crack, and I paused for three or four minutes, placing my feet against the rock, and watched it hopping among the luxuriant herbage which grows here in every cleft and fissure. I may here correct a common impression that St. Kilda is extremely barren. Some regard it as an igneous rock with precipitous sides, whose summit has less vegetation than the lava-beds of Iceland; and Mr. Seebohm says it does not possess a "tree or shrub, or even a bush of heather." There are 110 phanerogams on St. Kilda, and amongst them are *Sambucus nigra* (planted), *Salix herbacea*, *Calluna vulgaris*, *Erica cinerea*, and *Lonicera periclymenum*. On three islands, Borrera, Soa, and the Doon, the grass is long and plentiful between the rocks, and, though St. Kilda proper has a very barren look from the sea, a short examination will show that, although the flowering plants are comparatively few, yet some of them grow with exceptional luxuriance on the cliffs where they are beyond the reach of sheep. The sorrel (*Rumex acetosa*) especially attracts attention on the north-east of St. Kilda, and the primrose can be gathered here in most places. The Wren has therefore plenty of cover, and I should say insects also; and it would take some of the best cragsmen in the Alpine Club to extirpate it. I never saw it within 400 ft. of the water's edge. Those who study the daily weather charts issued from



the Meteorological Office in London will see that the centre of a great number of the cyclonic disturbances which affect the British Isles pass near St. Kilda and the Hebrides; and it may be that this fact, combined with the situation of St. Kilda and its freedom from frosts, affects the growth of some species which prefer a very moist, uniform, and cool climate near the sea. Whether the St. Kilda Wren derives any of its characters from the same influences I am unable to say. Out of the six occasions when I saw a Wren I only got a shot twice, but never saw the bird at which I fired afterwards either alive or dead. My anxiety to procure one could not be disguised, and as I passed by the houses daily "Dra-an-dhoun," the St. Kilda name for the Wren, was frequently heard in the remarks of the natives, who, I began to fear, had given me that nickname. Sandy Campbell, a native of Skye, was the only man on the island, except the minister, who could speak English, and he was the medium of every ornithological query put to the natives. He did all in his power to procure me a Wren. Naturalists will be pleased to read of Mr. Seebohm's success in procuring such an interesting bird, and I am glad to learn from a letter received early in July that Mr. Dixon, who obtained it, had Sandy Campbell with him, upon whom I had impressed the importance last year of obtaining at least one specimen of it. St. Kilda, as well as the Orkneys and Shetlands, are all well within the 100-fathom line on the west coast of Europe; whereas Faroe is separated from it by water 400 to 500 fathoms in depth.—RICHARD M. BARRINGTON (Fassaroe, Bray, Wicklow).

**Green Sandpiper at Farnborough.**—On August 7th, at a deer-pond on the downs near here, I shot a female Green Sandpiper (*Totanus ochropus*) weighing  $2\frac{1}{2}$  oz., and measuring 11 in. The barred tail-feathers and axillary plume are the subject of a tail-piece in Bewick's 'British Birds.' The bird is rare here. Is it common elsewhere?—E. T. WHITEHURST (Farnborough Rectory, Wantage).

[The Green Sandpiper is a regular spring and autumn visitor, generally appearing about the last week in April, and again about the end of July or beginning of August. On its return in autumn it often stays a considerable time, frequenting small streams, out-of-the-way ponds, and marsh-drains, where we have frequently met with it when looking for Snipe in October. Occasionally we have heard of specimens being shot in November and December, but the majority of those which visit us in July and August go a long way south and south-east for the winter.—ED.]

**White Carrion Crow.**—A beautiful specimen of a white Carrion Crow (*Corvus corone*) was lately killed near Brecon by Mr. Rees Williams, of Aberskir, and has been sent to Shrewsbury for preservation. Albinos occur frequently among Rooks (*Corvus frugilegus*), but are, I think, much rarer among Crows and Ravens. Unfortunately this bird had been sent off

before I had an opportunity of examining it, or it would have been interesting to have noted the colour of its eye. In most albinos it is pinkish red, or brown with a reddish tinge, as was the case with a white Starling killed last year at Aberystwith, and recorded by me (Zool. 1882, p. 144). On the other hand, some years since I saw a white Jackdaw (*Corvus monedula*) with not only the plumage, but the eye, beak, legs, and claws pure white; this, however, seems to have been an exception to the general rule. I also saw recently, at Aberystwith, a peculiar buff-coloured Starling killed near that town. Speaking to a brother naturalist the other day he agreed with me that, considering the enormous number of Starlings, albinos among them were most rare. I hope the Editor will therefore forgive me if I say that his note thereon (Zool. 1883, pp. 144) has not yet converted me to his views.—E. CAMERIDGE PHILLIPS (Brecon, S. Wales).

**Habits of the Huia.**—Any reliable information about the life of the Huia, *Heteralocha acutirostris*, Gould, will doubtless prove acceptable to ornithologists, as particulars of the habits of this bird in its wild state, as hitherto published, have been very meagre. Its range is restricted; a few years ago we found it was not of very rare occurrence in some of the valleys that run into the spurs of the Rimutuka mountain; about the Manawatu country it is yet to be met with. That it will be driven thence within a short time seems only too sure, for the clearings of the noble forests in that district are permitted to be carried on with great rapidity. Maories, too, lend their aid in the work of extermination; they have great regard for the plumage of the bird as an ornament; rangitiras of very distant tribes may be seen decorated on certain great occasions with the feathers or with the head of the Huia. These much-prized ornaments lead to the destruction of great numbers of these interesting birds. The Maories use very effective calls which draw Huias from a considerable distance; in the winter months, about July, camps are formed for the purpose of hunting these birds; usually some hundreds fall victims to arts of the destroyer. Not only are skins with the heads dried; I have a female specimen which the native taxidermist has preserved whole in a flattened state. Huias usually wander about in pairs; they are very seldom to be seen on the ground; their time is mostly passed in the tops of the larger timber trees, travelling from limb to limb, moving from tree to tree. Their flight is not powerful nor long sustained, rarely do they cover more than a hundred yards without perching. Sometimes, in the winter, as many as four may be seen in company, in which case it is probably a family party that is thus met with. Although their home is in deep forests amongst huge trees, they have been observed in manuka scrub (*Leptospermum*) that clothes the more open spurs and terraces, but such occurrences have been rare. Like so many of our native birds, they are very tame and confident, and perhaps may never acquire the safeguard of shyness. Restless, they roam about,

shifting their quarters frequently. Early are they astir: their peculiar whistle or call may be heard soon after daybreak lights up the forest, when their food-search begins. Their notes are more often sounded in dull or foggy weather, when mists settle on the leafy tops, and the broad trees—clad with mosses and drooping parasites—are dropping glistening beads of moisture; the sweet note of the Huia is then frequently heard. To those not familiar with the aspect of New Zealand forests it may be told that the lofty trees are clad with mosses, with tangled network of delicate filmy ferns that hang translucent—an evergreen fringe that overlaps the rough bark of the great stems that tower aloft. Beneath this covering lies the Huia's food; both sexes may be noticed, using their strong white bills to tear away mosses or ferns in order to extract the larva or grub of one of the large Longicorn beetles (*Prionoplus reticularis*). This insect is well distributed from the interior to the coast; in summer time it hums its sonorous drone just about dusk. The larva is found very plentifully in the decaying wood; the industrious birds strip away ferns or tear rotten wood in order to get at the sluggish insect; the stiff shafts of the tail-feathers aid them in their work by being pressed closely against the bole or branch. The breeding season is late spring or early summer, as I have notes of two nests in the month of November. Huia's being often noticed about an ancient hinau tree (*Clæocarpus dentatus*) that stood about two miles from the banks of the Manawatu river, the nest before me was discovered. There was a large hole about fifty-four inches long by eighteen inches wide at eighteen feet from the ground, not far above a large limb. The nest was placed a little below the mouth of this cavity, about sixteen feet six inches from the ground: the diameter of the tree was four feet. It is a large structure, rather loosely yet symmetrically built, the foundation of coarse grasses and the bases of dead grass-leaves, closely plied and twisted together; on these the walls are raised, of dead sprays and bits of coarse herbaceous plants, twined into a basin-like form; the inside lined with long chips of coarse yet soft grasses; the whole measuring, outside the walls, thirteen inches in diameter, with a cavity of six inches and a half in width, the depth not exceeding four inches. On November 18th it contained one young bird that appeared about a week old; this was carefully fed on the larvæ of the beetle before mentioned, and is still alive. The nest material had been collected from the ground. In November, 1881, a nest was discovered in the same neighbourhood which contained three young birds.—T. H. PORTS (Ohinitahi, February 6, 1884).

**Tit's Nest in a Railway Carriage.**—The following paragraph is from the 'Suffolk Chronicle' of May 31st:—"Mr. Wm. Briggs, the engine-driver on the Clacton-on-Sea branch, forwards an account of an ornithological incident of some interest. In one of the buffer-plungers of a carriage which is running on that line a pair of Tomtits have built a nest. The

eggs have been laid and the usual attention is now being paid to them. The only entrance to the nest is through a round hole, exactly one inch in diameter, and is precisely in the centre of the buffer-facing. This hole is, of course, covered by the buffer-facing of trucks when going towards Clacton or by the buffer of the engine when going to Thorpe, so that the bird is a prisoner on each of her trips. On arrival at Clacton-on-Sea on Wednesday morning the buffer was watched, but although the carriages stood there for about two hours, the bird, which was distinctly seen on arrival, was not observed to leave her nest. No doubt her mate was waiting for her at Thorpe, where their movements were first observed on Tuesday by some plate-layers." The distance from Thorpe to Clacton is four miles and a half. Being acquainted with the station-master at Thorpe (Mr. Rushbrooke), I wrote to ask if he could verify the statement. Annexed is his reply, dated June 9th.—H. MILLER (Bismere House, Norwich Road, Ipswich).

"I have pleasure in verifying in every particular the correctness of Mr. Briggs' statement, as per extract from 'Suffolk Chronicle,' but am sorry to say that some mischievous individual has destroyed the nest since the account appeared. I am vexed it should be so, as doubtless the eggs would have been hatched, rendering the incident more interesting thereby. I return the extract."—O. RUSHBROOKE (Railway Station, Thorpe-le-Soken, Essex).

**Common Domestic Duck diving for Food.**—When at Buxton last year I spent a good deal of my time in watching and occasionally feeding the waterfowl in the ponds of the garden. On week-days the ducks received large contributions from the visitors, but on Sundays they apparently were on rather short commons, judging by their greater activity in searching for food, and constantly standing *on their heads* in the water, so as to search the bottom for aquatic plants. Of course every scrap of plant to the depth of ten or fifteen inches (eighteen inches where the geese were) was cleared away. I was surprised one Sunday to see a common Domestic Duck (female) diving in three or four feet of water, and searching along the ground, as if she had been "to the manner born," for plants, which, when she found, were brought to the surface; some fifteen or twenty other ducks watched her proceedings with great interest, and made an immediate rush at her when she came up to share in the food, exactly as the Wigeon pounce upon the Canvas-back Ducks at the mouth of the Delaware River and other favourite winter feeding-places of these delicious birds, which, notwithstanding their difficulties with their thievish tormentors, must manage to pick up a fairly good living, as when killed they are usually in fine condition. I saw only one duck (a Mallard) at Buxton make any attempt to imitate the clever diver, but his efforts were always ignominious failures. Had I been living in Buxton I should have endeavoured to get some eggs of this diving duck and had them hatched, with the object of



finding out if the progeny inherited the peculiarity of the mother.—JOHN RAE (4, Addison Gardens).—*From 'Nature.'*

[We have on several occasions observed farmyard ducks diving in sport, but not in search of food.—ED.]

**Scarcity of Summer Birds in Co. Kildare.**—During the past summer Spotted Flycatchers and Cuckoos have been remarkably scarce in this district; and most of the smaller summer migrants also appear to me to have been less numerous than usual. Several persons have remarked to me on the great scarcity of Cuckoos, some saying that they had only heard two or three all the season, while in other years they had heard numbers every day. I did not hear the Cuckoo here more than half a dozen times this year, although during the past few years I have heard it constantly through the month of May from where I now write. The Spotted Flycatcher, too, has not appeared in many of its usual haunts in this immediate neighbourhood. This was also observed by a friend of mine, who remarked on its absence from his garden, where it has been in the habit of nesting for years. The Corn Crake, on the contrary, which I am inclined to think is becoming more abundant here than formerly, appears to have been more plentiful than usual this summer. I saw more Corn Crakes than I ever saw before during the early part of May; they made known their presence, moreover, in considerable numbers by their incessantly-repeated notes. During the greater part of May and June it would have been impossible in this neighbourhood to help hearing several calling at once at all times of the day and night. Perhaps, however, their seeming greater abundance was not a reality. The grass was very backward during the spring for want of rain; that accounts for my seeing so many, for the grass in many parts of the meadows did not cover them. And I noticed that after many weeks of fine dry weather, when the rain came towards the end of June, the Corn Crakes became comparatively silent. So possibly circumstances made them appear unusually numerous. Whether the wet weather was the cause of the cessation of their notes I am unable to say. The Swallow, Swift, and the two Martins appeared in their usual numbers. The Chiffchaff I first heard on March 16th (the earliest date on which I ever observed it); the Sand Martin I saw on the 27th; and the Willow Warbler I first heard on April 3rd. These three birds arrived earlier than usual this year, but those which do not come so early did not, so far as I observed, appear earlier than the average date of their arrival.—J. E. PALMER (Lyons Mills, Straffan, Co. Kildare).

**Instinct in Birds.**—The question of instinct, as compared with reason in animals, is one commanding a good deal of attention, so that circumstantial evidence on either side is of considerable value. One of the most remarkable points of this question is the fear of man, or other

natural enemies, on the part of animals and birds. That this is an acquired feature, so to speak, is shown by the entire absence of such fear in islands where birds, &c., have never seen man; but is that knowledge of danger in inhabited countries imparted by the parent birds or not? This will help somewhat to show that it is. A few days ago I visited a friend of mine, who said, as soon as I entered the house, "Oh! I have something fresh to show you," and he left the room and returned with a young, but nearly full-grown, Starling perched on his shoulder. This bird he had picked up when very young, it having evidently dropped from a nest, and had reared it successfully. Though a perfect stranger the bird allowed me to take it up, and it perched on my finger, and nothing that I did in the way of a sudden noise seemed to disturb its serenity in the least; in short, I never saw a bird so devoid of fear. My friend keeps a cat, but its first introduction to the Starling was by the latter flying in its face, which has evidently so upset the calculations of the cat that it never attempts even a hostile demonstration. This bird has free run, or rather "fly," of not only the house but the garden; in fact, it is free to go altogether, but it never does go far, and, so far from being a "shy pet," it is the most obtrusive, impertinent bird I ever saw, and if its "tame-ness" and utter want of fear increases with age it is likely to become a somewhat troublesome Starling. I think this is worth recording, as I was able to judge the case myself, and it seems to support the idea that many characteristics of birds and animals that are regarded as innate are really not so, but that the information is imparted by the parents.—EDWARD LOVETT (Addiscombe, Croydon).

#### FISHES.

**Long Sun-fish near Penzance.**—On June 21st a specimen of that rare species, the Long Sun-fish (*Orthogoriscus oblongus*), was observed by Mr. F. W. Millett lying dead on the beach at Marazion. I saw it two days afterwards. It measured, to the extremity of the caudal fin, 2 ft.; its greatest depth was 1 ft., the pectoral fins were 4 in. long, the dorsal 7 in., and the anal 6 in.; the eyes had been eaten out, but their sockets measured  $1\frac{1}{4}$  in. in diameter, being certainly large for the size of the fish; the caudal fin was well defined and rayed, and extended from the dorsal fin straight down to the anal. The fish had a very small mouth (from which the teeth had rotted out), and had no scales but a placoidal skin not so rough as the skins of the smaller Sharks. This specimen must have been dead for some time, for when I saw it it was too far decomposed to be set up. Its colour was of a uniform dull leaden blue, but a specimen captured alive at Looe last year (Zool. 1883, p. 342), and of which my friend Mr. Stephen Clogg advised me at the time, showed brilliant colours on its sides.—THOMAS CORNISH (Penzance).

## SCIENTIFIC SOCIETIES.

## ENTOMOLOGICAL SOCIETY OF LONDON.

July 2, 1884.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

Dr. Fritz Müller (Blumenau, Santa Catharina, Brazil) and Dr. A. S. Packard (Providence, Rhode Island, U.S.A.) were balloted for and elected Honorary Members of the Society; and Charles Golding Barrett, Esq., was elected an Ordinary Member.

Mr. C. O. Waterhouse remarked on the great changes which occurred in the colours of insects from exposure to light, changes so startling that they would certainly mislead anybody not cognisant of the fact; as a rule, brilliant fiery red became changed to bright green, blue to black, green to purple or purplish brown, and pale yellow to light brown. In illustration, Mr. Waterhouse exhibited certain specimens of the following Coleoptera before and after exposure in the show-cases of the British Museum:—*Eurhinus cupratus*, Illig., *Poroppleura bacca*, Kirby, *Eumolpus ignitus*, Fabr., *Doryphora cincta*, Germ., and *Omoplata aulica*, Bohem. Mr. W. L. Distant remarked that from this cause quite recently old and exposed specimens of Lepidoptera had been described as new species.

Mr. E. P. Collett exhibited a specimen of *Calosoma sycophanta*, Fabr., captured on the cliff near Foreness Point, Kent, by Mr. Cockerill, in 1879; also thirteen females of *Athous difformis*, Lac., captured last June by sweeping at night at Guestling, near Hastings, by the Rev. E. N. Bloomfield.

Dr. Sharp exhibited two nests or cocoons he had received from Mr. James Inglis, of Dilkhoosha, India, each containing a large stag-beetle, *Odontolabus carinatus*, Keitter. These nests were constructed in the thatch of a house, which was mixed with much earthy matter, and were lined with some fine earthy substance making the interior smooth. Mr. Inglis sent them under the impression they were the hybernacula or "winter-nests" of the stag-beetle; but they were more probably the cocoons in which the insect had undergone its transformation to the imago state, although it was improbable that the larva of so large an insect should live in and feed on the thatch.

Dr. Sharp also exhibited a small insect recently received, together with its larva and peculiar nests constructed by the latter, from Senor Antonio de Lacerda, of Bahia. The beetle is a small *Cassida* identified by Mr. Waterhouse as *Porphyraspis tristis*, Dej. Senor Lacerda states that they are found on the "young leaves of the cotto-nut tree." The larva constructs a nest, similar in form to a bird's nest, and composed of coarse vegetable fibres, which are apparently attached to the insect by a membranous process

extending from the hind part of the dorsal region of the insect; the latter is thus completely concealed by these fibres, so that no one would suspect there was an insect beneath them.

Mr. W. F. Kirby exhibited drawings of a new species (and probably genus) of *Mymaridæ*, which had been bred by Mr. J. M. Gooch from the coccus affecting St. Michael oranges, and which appeared to be near the genus *Limacis*, Först., but had some of the characters of the *Tetrastichidæ*; also an extensive series of drawings of the saws of sawflies drawn by Mr. Gooch under the camera from fresh specimens.

Mr. T. R. Billups exhibited specimens of *Trichopteryx brevicornis*, Mots., a species hitherto only found in Madeira, which were shaken out of a stack of radish seed at Canning Town, West Ham, in November, 1883.

Mr. Billups also exhibited specimens (some living) of *Pelopæus architectus*, St. Farg., and its nest, which was found attached to a leaf of tobacco from Owensboro, Kentucky, and taken from a hogshead weighing over 12 cwt. recently opened at Whitechapel. Mr. Kirby remarked that he had seen a similar nest to the one now exhibited attached to a pod of maize.

Mr. A. Sidney Olliff exhibited a small coleopterous larva, evidently one of the *Staphylinidæ*, and possibly that of a species of *Philonthus* or *Quedius*, which was found by the Rev. Robert Dunn, of Cricklade, engaged in a vigorous encounter with a large earthworm. The specimen was the one to which Mr. W. E. Darwin called attention in a letter published in a recent number of 'Nature' (vol. xxx., p. 146). Mr. Billups thought this no uncommon occurrence, as he had frequently witnessed encounters between the larva of *Ocypus olens* and earthworms, and had kept *Carabus auratus* alive on nothing but earthworms for more than five months. Dr. Sharp remarked that *Cybister Ræseli* had been kept alive five to seven years by being fed on earthworms once or twice a day; he thought that the larva exhibited was carabideous, and that earthworms were the favourite food of carnivorous coleoptera. Mr. Waterhouse remarked that he had fed the larva of a *Telephorus* on earthworms with much success. Mr. W. Cole thought it very probable that the later stages of many entozoa which were known to exist in earthworms, and had been sought for in vain in birds, would very probably be found in coleopterous insects.

Mr. H. T. Stainton communicated a newspaper cutting taken from the 'Dundee Advertiser' of June 27th, 1884, in which it was recorded from Dunning, near Perth, that the gooseberry sawfly (*Nematus ribesii*) larva was making sad havoc with the black currant bushes; he had never known this larva to attack the black currants of his own experience. Mr. Waterhouse and Mr. Fitch thought it extremely improbable that the larva of *N. ribesii* would eat the black currant.

Mr. J. B. Bridgman contributed "Further Additions to Mr. Marshall's Catalogue of British Ichneumonidæ."—E. A. FITCH, Hon. Secretary.

